Making e-Government happen
Everyday co-development of services, citizenship and technology

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Abstract

In a joint research project concerning the use and design of IT in public services, we are using a simple figure of on-going design-oriented interactions to highlight shifting foci on relationships of co-development of services, citizenship and technology. We bring together a number of concrete examples of this on-going everyday co-development, presented from the different perspectives that we, as researchers from different disciplines and traditions, represent in the project. The article explores and discusses working relations of technology production and use that we see as central to what is actually making e-government happen - or not happen. The main challenge in this area, as we see it, concerns making visible, and developing supportive infrastructures for, the continuing local adaptation, development and design in use of integrated IT and public services.

1. Introduction

According to the new eEurope 2005 Action Plan [10], adopted by the Commission in May 2002, the goal for Europe is to provide its citizens with 'modern online public services' by the year of 2005. Proposed actions in order to reach this goal are development or extension of broadband connections, launching of an interoperability framework, continuing development of interactive public services and establishment of public Internet access points. Other important areas are e-services within culture and tourism and public procurement. These are the 'far-reaching commitments' that the Member States in the European Union have agreed upon.

In Sweden, the Swedish Agency for Public Management [22] is working on issues relating to democracy and public administration. Among other things, they provide support for the local and regional authorities in their development of e-government.

The ambition and goal for e-government in Sweden is to stay in the front line of the development, to achieve increased networking and a 'seamless' organization and one-stop procedure of handling an errand, and to facilitate citizens' participation in processes of decision-making within public administration. The slogan is 'one errand – one authority', which is supposed to be realized by 2005.

This, then, can be seen as the prevailing rhetorical, discursive context of the recent and on-going development within the e-government area in Europe, which also forms part of the coulisse for the practices described in our case studies. These examples take us from meta-level rhetoric to the shop-floor level, where 'the action' is supposed to take place. At the same time as the rhetoric moulds the concrete practices, the practices also may be seen as functioning as a mould for future development.

In everyday practices of e-government, services, citizenship/democracy and technology are designed, developed, configured, implemented and re-developed, by different actors, concurrently, continuously, and in interaction with each other. In everyday life, 'the web' is rather a boundary than a common object between these practices of design and development. Each group of actors – software developers, local designers, service providers, service-seeking citizens, politicians – seems to refer to 'the web' without much further reflection about their own versus other, alternative, perspectives held by other actors involved in the development of e-government. This tends to generate friction, frustration and feelings of helplessness rather than efficient IT support for public service provision, better services, and an expanded understanding of citizenship/democracy issues.

What started out as a way of making public service provision more efficient and effective, [17] implies in practice profoundly reconstructing public service provision. Internet-based 'One-Stop Shops', on-line forms,

or the publication of information via the Internet, do not leave the character of the services provided, or the organizations that provide them, unchanged. With the implementation of new technologies, the relationship between governmental agents and citizens, and, consequently, the meaning of citizenship, changes as well. What starts – viewed from a meta-level – as the rationalization of government, at closer examination turns into co-operative design and development of technological infrastructure, service provision, public service, and, along with this, the re-construction of the very concept of citizenship itself.
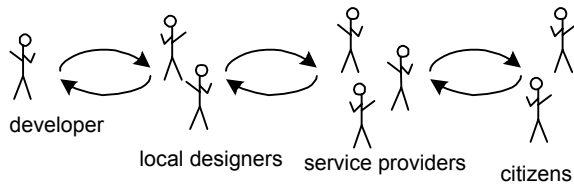
Figure 1

Figure 1 shows the simple picture we use to visualize complex, parallel, on-going, design-oriented interactions between some of the different actors involved. Design does not only take place in designated organizational spaces, but is also part of everyday implementation and use of technical infrastructures. As we will show with our field material, with different participants the focus and perspective on what is designed changes. The hypothesis we put forth in this article is that including the many different perspectives involved could improve both the quality of the process of developing e-government, and the successive outcome of this process.

In section 3, we turn to our research studies of how different interlaced discourses and practices of design take place and make e-government happen. We also show the frictions that occur and that call for tools and concepts to facilitate the interlacing of diverse design practices. Section 4 develops starting points in this direction.

In the following section, we introduce the perspective on design we all relate to, despite different disciplinary and theoretical backgrounds

2. Interlaced practices of design

Design is normally related with certain professional roles. In the context of information and communication technology, design is a practice mainly ascribed to computer scientists or information system professionals. The object of design is the technical infrastructure that should support the users in their everyday work. If work practice is subject to design, and if users should partici-

pate, it is often the role of a participatory designer [15] to take responsibility for the project versus the users, and mediate the use context for the software designers. The software designers themselves thus have little or no contact with the work practices for which they are expected to design supportive technology. Lucy Suchman describes this way of relating to and practicing design as 'design from nowhere'. '*This stance (...) is closely tied to the goal of construing technical systems as commodities that can be stabilized and cut loose from the sites of their production long enough to be exported en masse to the sites of their use.*' [25; p.27]

Our fieldwork supports Suchman's claim that computer systems to a large extent resist commodification in this sense (p.27). If they are socially embedded, they not only support work and business practices that can be regarded as constant, they also change them. Design of business practices, organization, the development of different ways of working and the implementation of technology are dependent on each other. In regard to municipal information systems, the technical infrastructure, its adaptation to a specific organization, the further development of services and service provision with the help of the new technology, and, in consequence, the relation between citizens and public administration – and that means the concept of citizenship – changes. Different design practices with different foci and actors that are interrelated are taking place in parallel. How can we make sense of, and facilitate, the interlacing of different and diverse design practices?

Suchman proposes an alternative concept of design. Understanding design as artful integration of different social as well as technical contexts allows for taking working relations of technology production and use into consideration, rather than negating them. [25; p. 22] '*Powerful technical systems on this view comprise not hegemonies but artful integrations. Design success rests on the extent and efficacy of our analysis of specific ecologies of devices and working practices, finding a place for our own technology within them.*' [25; p. 34] The figure we introduced above (Figure 1) shows part of the network of working relations that interact in what is called e-government. The different vignettes in the next section give concrete examples and explore parts of such networks. And they show examples of where things do not work out, where frictions and conflicts indicate lack of integration.

Suchman's change of perspective is rather a program than a conclusion. Today's methods and practices of design often do not take the different interdependencies into account. In the discussion section we bring together concepts and methodological approaches from different directions that we see as useful for facilitating the inter-

lacing of the diversity of different design practices that comprise e-government.

3. Making e-government happen

Our fieldwork took place in different municipalities and with different underlying theoretical frameworks. Therefore, we have chosen to present and discuss our examples in the form of vignettes, that is, as episodes based on, as well as containing field material from, our case studies of IT use and design in public service administration. In the diversity of the described practices of development of bits and pieces that are part of e-government, a common problem of co-operation in design becomes visible. There are no established, sustainable structures that facilitate and integrate the co-operative design of citizenship, services, service provision, and technical infrastructure when municipal services are moved on-line.

The first vignette, 'Reconfiguration of citizenship and relations', is written by Annelie Ekelin, who works with the research group 'Informatics and Work'.

The second vignette is written by Pirjo Elovaara. 'Who develops the municipal website?' highlights the on-going negotiation of stability to make the web happen. Pirjo is doing her research within the discipline of Technoscience Studies.

The third vignette, 'Cultivating organizational infrastructures', is by Sara Eriksén, who has a background in Informatics and Work Science. Sara takes a close look at on-going local design of IT in a one-stop shop.

The last vignette, 'Co-developing technical infrastructures' is written by Yvonne Dittrich and Christina Hansson, who are doing their research within Computer Science, with a main focus on use oriented design and development of software.

Despite our diverse disciplinary and project backgrounds, we use similar field study and analysis methods. We work with qualitative methods. We observe concrete work practices, sometimes documenting them on video or audiotape to allow for detailed interaction analysis. Open-ended interviews are taped and analyzed. Participatory design is both a goal we share in studying and working with the development of e-government, and a means to interact with our research partners around design, as it provides additional input for our analysis of both current situation and possible design.

3.1. Reconfiguring citizenship and relations

The process of reconfiguration [26, 18] of relations by access to technologies and public services online is of importance for the ongoing renewal and modernization

of the public sector. Reconfiguration of the communication between citizens, local employees and official authorities means, i.e. activities on defining, representing, restricting and controlling the dialogue as well as facilitating use. These changing conditions of communication, work and use of technologies [25], have implications for the future enactment of citizenship. Access is important, but an equally important question to put is; access to *what* and *by whom*? Provision of public access also changes relations, due to shifting competencies, evolvement of new intermediary roles and also increased possibility for autonomy among citizens, [12], which the practical examples in this vignette will show.

The discourse regarding e-democracy and e-government prerequisites active citizenship and that access to new technology is a fundamental right for everyone. A view of citizens as service recipients – rather than active participants – has hitherto been predominant within the European context [12, 1]. In the figure below (Figure 2), the 'normal' communication channels are highlighted, indicating the dialogue between service providers and citizens', 'furthest away in the food-chain' (or at least in the periphery of what traditionally is regarded as the core-business in software development) [15, 6]. The need for changes in communication and relations is acknowledged by both citizens and employees within public administration, illustrated by the practical examples in this vignette.
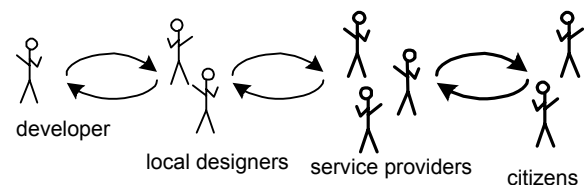

developer   local designers   service providers   citizens

Figure 2

Two Canadian researchers, [4] working within community informatics, emphasize access as an intrinsically complex issue. They suggest a workable definition and method of defining a holistic view of the concept of 'universal access', a socio-technical model called 'the access rainbow'. This model expands the understanding of 'access' as being merely a question of creating physical connectivity to Internet-based information and services, acknowledging the complexity of the notion, by describing a multi-layered model [4; p. 40], comprising seven layers, including *carriage and facilitates, devices, software tools, content and services, service and access provision, literacy and social facilitation, and finally governance*. [4; p. 36]

Without denying the importance of everyone's 'right to have access', I would like to focus upon another

phenomenon, which sometimes occurs as an additional attribute of a rainbow, namely the appearance of a 'fogbow'. This could be used as a metaphor for expanding the 'access rainbow model', and for discussing *exclusion within the practice of inclusiveness.*

A possible way to make this almost opaque, sometimes-visible phenomenon perceptible is by discussing access *both* in terms of exclusion and inclusion, addressing citizens as well as employees within the local authorities. By showing ways of exclusion in practice, experienced in ongoing service development in Sweden, the issue of access is further explored, in relation to everyday work practice as well as everyday use practice, in the following sections.

My first example, then, is about **the cleaning lady and the public Internet monitor** (PIM). During my fieldwork in connection with the evaluation of the PIM project [7], I by chance heard of a middle-aged immigrant woman, who worked at a library where a public Internet monitor had been installed. She had learned to use the terminal on her own, during lunch-breaks and whenever she felt she had the time to explore the new device that had been placed in her working environment. She even introduced her children, relatives and friends to it. When management found out that she was using the terminal, she was stopped from doing so. She had to work her scheduled hours, and not conduct personal tasks during working hours. In this case, her work position as a cleaning lady was a hindrance for her to develop her autonomy. She had a job, and a work role, that traditionally does not support personal initiatives towards enhancing skills and personal development. When I interviewed the woman, she turned out to have valuable insights concerning the location of the terminal and the interface of the portal. Her insights and suggestions could have been of importance for future placement of the terminal, if there had been formal ways to gather such feedback.

The discourse on accessibility emphasizes that the services are provided 'all the clock around', at all times of the day and night. The example with the cleaning lady shows that there are invisible borders surrounding the 'access for all' vision, and makes visible the 'fogbow of access', the layer of 'exclusion within inclusiveness' as well as the mechanisms of reconfiguration of relations and access.

What happens, then, with the desirable increasing of autonomy for citizens, and stimulation of an active citizenship, if the right to have access turns out to be limited in reality due to restrictions in work practice, stating 'not during working hours'? Yet my first example ends on a hopeful note. The cleaning lady was not prepared to give up her recently acquired autonomy. She continued searching for public information and official services during lunch-breaks and after she had completed her work.

My second example could be titled **How to create better interactivity–while ignoring actual user feedback**. The national authorities had the intention of stimulating the local actors in establishing chains of anchoring activities concerning the PIM terminals, involving local authorities and 'local hosts' (basically, employees at libraries, one-stop shops, and local authority offices. This was unsuccessful in many places, due to lack of resources. Several hosts pointed out the need for extended possibilities to deliver feedback to the authorities, and the authorities pointed out the need of involving these actors in further development of the project, but in reality there were no plans on developing processes for active incorporation of users' feedback.

The local hosts and facilitators for the PIM projects' terminals were dealing directly with the phases of *social facilitation* and *reconfiguration* according to the access rainbow model [4]. In actual practice, this means, for instance, giving extra support to marginalized groups, acting as mediators and assistant authorities, restricting the use by technical configurations, controlling the access by putting up hindrances for certain kind of groups (i.e. youngsters using the terminals for playing games, or individuals such as the cleaning lady). But they were not allowed to take active part in processes and activities of local tailoring and service design [6], where they could have put forward opinions on functionality, gathered during the numerous sessions with the citizens:

'It would be marvelous if we could talk to some people in management on these issues. It is possible to develop further, because we gather opinions and information on possible improvements, but now no one knows who is responsible, and it takes such a long time before it reaches the right person, if it ever gets there.' (Host number 2)

3.2. Who develops the municipal web site?

The purpose of this second vignette is to explore everyday working relations [25] when developing and providing on-line e-government services on the Internet. The empirical material is based on a pilot study from a medium sized Swedish municipality. The focus is the backstage work of the municipal web site as a precondition for providing and making municipal information and services accessible on the Internet.

The official political guidelines stratified by the Swedish government form an overall theme for all public information technology activities, both on a national and local (municipal) level. The latest government bill of

information technology, titled 'Information Society for All', was launched in March 2000 [21]. One of the main themes of the bill is the emphasis on efficient public governance. The national political documents, such as the actual government bill, play a dual role, forming a political landscape for the public sector IT development in Sweden. Besides pointing out the obligatory character of information technology, the political documents also show in what fields and in what direction the IT based services should be developed.

A political information technology strategy document, equivalent to the national political goal document described above, was accepted by a local city council during year 2000 in a medium sized Swedish municipality. If we compare the political goals articulated in the government bill, we can see that the local politicians formulate goals to a high degree identical to the national goals: emphasis of the importance of information technology for the competitiveness of the municipality as such, strengthening of the idea of the municipality as a deliverer of the public services of the welfare state (regional development, democracy, quality of life, gender equity, efficient public governance) and offering possibilities for/demanding an active participation of the citizens. Once again, we meet a manifestation of the importance of information technology as an arena for efficient public governance and a re-configuration of citizenship.

Everyday work is needed to translate the overall political visions of governance into concrete e-government services. The most common IT platform for this translation work is the Internet and its web based applications. In order to see what this translation work is about, I interviewed a web developer employed in the same municipality as where the strategy document was published. During the interview, I was especially interested in the following issues; 1) to see how the co-operation between him and the persons employed at the municipal IT department works 2) to see in what way the political goals get translated into concrete IT services, and 3) to see what other actors are involved in everyday IT work.

In the following, I will present a thematic analysis of the interview material in order to connect the empirical analysis to my original questions of concern.

The most central issue in John's (the web developer) talk is *people,* and the existing and non-existing co-operation between them. He presents different categories of people involved in one or another way in the web production, but his categorization is not based on the idea of who is a technical expert, a system developer, and who is not. He talks about to what degree people around him, who in one or another way are involved in the web site development, are engaged in and committed to their work.

John's categories include enthusiasts, the critical ones, the uninterested or the slower-downers, and, finally, the ´fixers´ or the ´cleaners´.

The real enthusiast in this specific case is characterized by John as follows:

'He had competency of both IT and organizational development. He had sketched how to tear down the borders. How to pee into the administrative borders. A tool to tear down the borders.' [Here John is talking about the municipal IT strategy manager.]

In this actual case it is often the politicians who are the critical ones. John says:

'Yes they [the politicians] do care. But they care afterwards. When they are not satisfied they care. But they do not care before hand.'

To the same group belong the persons inside the organization who are, for one reason or another, uninterested, and who therefore might become the slower-downers, or, as John puts it:

'There is a push inside the organization at the same time as there is resistance in other parts of the organization'" [Here he refers to persons having a role as web site publishers in different municipal departments, individuals who often get this assignment on top of all the other responsibilities they already have.]

The ´fixers´ or the ´cleaners´ are the ones who try to pick up the pieces when there is lack of money, delays of software deliveries, and uncommitted fellow workers:

'[John has been talking about the passed deadlines and complicated situations both considering persons and software, when he starts to talk about one particular person] who had to jump in and take responsibilities towards politicians…so he had to jump in and take care of keeping the project alive and seeing that it's functioning and that it develops and goes on… I was given four weeks to find a new publishing system and to be responsible for the installation. It was impossible, actually….She [now he talks about a woman employed at the municipality] worked like a dog, night and day.'

John does not only mention people as actors, but refers to various non-human actors, such as **organizational issues:**

'For example, what kind of menus we should have and who is allowed to be there and to be visible…There was a fundamental shortcoming in the structure from the beginning. Namely, that we had used the administrative structure of the municipality as the starting point [on the website]…There were many roundabouts. The structure was re-designed. There was internal dissatisfaction: 'People can't find me…'.and so on and so on…. Never-ending discussions.'

…politics:

'We don't have any money to develop the 24 hour authority [= the official Swedish term for providing electronic public services for citizens], to provide interactive services, such as queuing for a childcare place. ...The Place for Democracy...we don't have any money to do anything...'

...software, co-operation with software companies:

'We had to find a tool that supported our ideas [of a decentralized version of updating the web site]. There wasn't anything that was ready-made.... And then we found a local company who had an embryo. It was far from the final version and it was not designed for the public sector. It was a dialogue. We took part and developed. We had requirements regarding the interface and the functions...Later on Nick [the visionary] started to consider the possibility of joining the Internet and the intranet with a publishing system. To build up one single platform. There were no tools that supported these kinds of ideas. Then we again found a company that had an embryo. They [=the company] presented pictures, but it wasn't ready. But it supported our idea of functionality and the way of working. ... It was cool. It was what we were looking for.... But they couldn't deliver. There was no functionality.'

...and finally, the issue of time:

'instead of being years ahead of others, we are actually many years behind.' [Here John is skeptically referring to the IT political document and its goals.]

The fragments from John's everyday life show that in this specific case the main concern between different categories of skilled persons was much broader than just the relations between developers and users. Actually, the categories of developers and users were not that explicit in John's talk. There was actually no person with formal system development training involved in the web site development. And what about the users? At one level, the users were the persons updating the departmental web sites, but at another level the users are the citizens, totally absent today in the web site development.

John did not talk a lot about political goals. However, these are present, because they steer the content development of the web site. What was a politically hot topic during the time I interviewed John was how to use the Internet as a democratic arena where the local politicians and the citizens can interact and communicate. As John's talk shows, he was concerned about this, but what was politically an important issue was difficult to accomplish in everyday work. And of course the whole web site investment from the municipality is in itself a clear indication of it' political importance.

John's story is a story of a network where both humans and non-humans interact and intertwine. In John's talk, there might be specific reasons for this. The period during which I met John was characterized by turbulence. The municipality was looking for new software for the Internet activities, the actual web site was being criticized both by the local politicians and the mass media, the division of labor was under constant discussion, there were no clear decisions about the content of the web site, and many of the key persons had left the municipality. It was, clearly, a period of uncertainty and instability.

One way to understand why there are so many problems is to consider the web site as a boundary object. [2] As long as the negotiations are not finished and the boundary object is not agreed, the web site work will continue to be a scene of disagreement and shadow activities. The core question is: How different can the visions of the web site be, and still allow the construction of a functional municipal web site?

3.3. Cultivating organizational infrastructures

One-stop shops, one of a variety of on-going forms of integrative organizing of public services, are a relatively new form of collocation and coordination of services in Swedish municipalities. Basically, they consist of an office where citizens are offered several different kinds of public services in one and the same location, often handled by one and the same person in a team of so-called generalists or public service guides. Although the reception desk is a central meeting place between the municipal administration and citizens/ other visitors in this environment, a large part of the service provision is actually carried out by telephone. The computer support for front-office work in one-stop shops has in recent years become more and more Internet-based and integrated with public services on-line as well as with intranet solutions within the local municipal administration.

The one-stop shop in central Sölvesborg, inaugurated in the spring of 1992, is one of the oldest municipal one-stop shops in Sweden. Here, in sequential case studies, we have been following the development of computer support for front-office work since 1995. A team of public service guides staff the one-stop shop, answering questions and helping out, either face-to-face, by phone, via e-mail or, in some cases, by internal or regular mail. The front-office team is responsible for keeping much of the municipal information on the Internet and the municipal intranet updated, and for the further development of public information and services on the municipal website. They are well acquainted with what kinds of information people ask for and need, and, as they use the Internet/intranet themselves all the time on the job, they are aware of design and accessibility issues.

Ten years ago, when the one-stop shop first opened, most of the applications accessible via the municipal

network were mainframe systems, supplied by the main national dealer in software for municipal administration at that time. Today, the front office team uses the Internet/intranet, regularly accessing and using more than 20 different applications from almost as many different software providers. (This is not including all the more or less invisible middleware that keeps the network going. To get an approximate idea of the number of different programs they consciously work with on a day-to-day basis, we simply counted the program icons on their digital desktop, and checked that these were what they themselves perceive as the applications they use most regularly.)

When, during our field studies, we asked the team-leader and manager of the one-stop shop if we could talk to the people in the municipality who were responsible for the computer support – technicians and systems designers in some central IT department, we imagined – she answered spontaneously and almost indignantly '*The designers? That's us!*'

Sensing our consternation and doubt, she explained by offering concrete examples. The first example concerned the decision process in the purchasing of a new computer system.
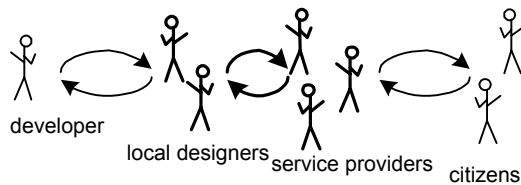
Figure 3

A few years ago, the municipality decided to invest in new computer support for the telephone exchange. In the purchasing process, the front office work team set up the main functional requirements and, in the end, made the final choice between different available systems. The municipal technicians gave them advice about technical aspects of the various systems offered, based on the overall IT strategy in the municipality, network capacity etc. The front office team has gained considerable experience during the past few years in specifying their needs and not only participating in, but also initiating and carrying through, the purchasing processes for necessary applications to further develop their computer support. At the level of analysing needs, exploring options and deciding on what new pieces to add to the puzzle of different applications in use, their claim of being 'the designers' seems indeed to have substance. In a broader sense, the fact that they are actively and continually involved in designing and developing the computer support for service provision, means that the front office work team is also deeply and daily involved in designing and developing public services.

The second example offered by the manager concerned software design, in this case the continual design in use of an Internet-based system for booking locales (tennis courts, conference rooms etc.). A small software consultancy firm in the region has developed this application. When asked what parts of the current computer support they find most useful, functional and well designed, this is the application the front office team uses as the best example. The consultancy firm keeps in contact with their customers, municipalities and associations all over Scandinavia, and provides support both via telephone, via their website on the Internet, and via visits. They have customer support meetings between 8 and 10 times a year, during which problems and new ideas are discussed, and suggested changes and further developments listed and prioritised. The processes of continual support, take-up on customer feedback and further design and development, which this firm cultivates, may well be a large part of the reason for their successful product. They produce approximately 15 – 20 new versions of their basic application per year. These are continually being provided to all customers via the firm's website, with descriptions of 'what's new'. This allows their customers to choose for themselves whether the newest version is one they need to download or not, depending on what new functionalities have been added.

Through the customer feedback processes, there is apparently some substance to the Sölvesborg front office team's claim of being their own designers, even here. Admittedly, they represent only one of some 250 customers giving continual feedback about the product. However, it is clear that they themselves feel that they have been able to act as co-designers in the case of their most appreciated application, and that they still have a co-constructive role in its continued development.

Recent development in Sölvesborg has lead to the front office team earning a more official status in the organization as local designers of the municipality's intranet. They are now acting as consultants for other departments in how to use the existing possibilities, discussing and coordinating improvements.

However, the openly acknowledged role of local experts concerning the municipal Internet/intranet development and design, which the front-office team at the one-stop shop in Sölvesborg has earned in recent years, is still something of an exception, in our experience.

3.4. Co-developing technical infrastructures

In the spring of 1995, Ronneby, as one of the first municipalities in Sweden, launched its website on

Internet. Since January 1999, the municipality has run its own intranet, with links to information on the public web. Routines are currently being introduced to allow all departments within the municipality to be responsible for publishing their own content and services. The idea is that the latest information will always be available on Internet for the citizens. This is a way to realize the Swedish Agency for Public Management vision of '24/7 agencies'. To make it possible for all departments to publish their own information and services, a publishing tool is needed which makes it easy for the departments to administrate their own part of the web-site. During our study, the municipality had chosen to successively implement *Intrainfo,* a platform for among other things an administrative application for Internet/intranet publishing.

The study focused on the development of a part of the platform called *Intradok*, a document-management system which contains templates, that is, sets of rules for writing, displaying and storing various types of digital documents within the municipal intranet and the public website. It became visible, how much the publishing tool and the organization of work practices around the provision of services condition each other. One can hardly be designed without knowing about the other. Preferably, technical infrastructure and the practices of service provision should actually take place hand in hand [25].

As Ronneby municipality agreed on acting as a pilot customer for *Intradok,* Anna, a representative from the municipal information department, co-operated closely with Johan, a system developer from the software consultancy firm, around the design of the application. Most of the cooperation was carried out by phone, supplemented by the use of *pcAnywhere^{TM},* an application for accessing and temporarily taking over control of a local network-based PC application from afar.

We interviewed Anna and Johan and observed and video taped parts of their co-operative design sessions during 4 months. The following dialog is a translation of a part of such a development session. The purpose was to show Anna how to set up a new template for a specific set of documents, together with the related rules for access and editorial rights. At the same time as Anna is taught, she tests the tool and suggests changes and improvements. At one point, Anna recognizes that she cannot choose more than one responsible role for each template:

'*OK*', Anna says, '*has the role…, am I able to choose just one role?*'

'Yes, you can'

Anna continues: '*I mean, am I able to choose several roles?*'

'*Hmm…no!!*' (A pause of five seconds)

'*Hmm,… why has nobody thought of that?*' Johan answers.

'*Make a note, Johan!*' Anna says in a teasingly commanding tone, with a serious undertone.

Johan answers: '*You actually ought to be able to choose several departments as well.*'

Anna follows this up by giving some concrete examples of when this might be necessary. Johan makes a note of it and promises to incorporate this feature in the next version of *Intradok*.

The session turned out to be a teaching and feed back session at the same time, where expertise shifted back and forth between them during this mutual learning process. Since Anna took an active part in the design of *Intradok*, she will be able to adapt the tool and templates on the basis of the municipal present and forthcoming needs. One of the main tasks of the information department is the customization and implementation of the tool into the organization. Anna designs the space for tailoring and customization that the tool will provide. The cited exchange shows how necessary the co-operative design was in order to develop an information system that supports organizational practices. This way of developing *Intradok* differs from the traditional way of developing software; it is not a 'design from nowhere' where 'anonymous and unlocatable designers (…) problematize the world in such a way as to make themselves indispensable to it and then discuss their obligation to intervene, in order to deliver technological solutions to equally decontextualized and consequently inlocatable 'users'.' [25; p. 27] It rather relies on and responds to a working relationship with at least a few pilot users.

In parallel to our study of the co-operation between the consultant and the local developer, we studied the current practice around publishing vacant job advertisements. This part was carried out as workplace-studies and as a workshop focusing on the design of a common template and the related re-organization of work practices. Today, three secretaries construct and write their own job advertisements. They are responsible for different areas within the municipality. When the advertisement is completed, it is sent by e-mail to Anna, who edits it and then publishes it on the Internet and/or the intranet. According to the declared policy, the secretaries in future will edit and publish the advertisements themselves with the help of *Intradok*. This also implies that their work practice will change and new routines have to be introduced.

We arranged a half-day workshop around the current work practices and the anticipated change of technological support. All three secretaries have similar tasks and are located in the same corridor. Nonetheless, it

turned out that they had almost never discussed their work among themselves. At the workshop, they got the possibility to do so, and to share their expectations concerning the new tool. When the differences in their work practices became visible in the discussion, they took a step back and reflected on their different ways of working. Towards the end of the workshop, the secretaries designed a proposal for a common template for job advertisements. Ideas and suggestions that were discussed at the workshop were summarized at the end of the day and passed on to the local developer, in order to feed back into the design process. Instead of establishing an enclosed site for developing the templates without participation and suggestions from end users, we brought out the development to the environment of the intended use of the templates. When development takes place in the intended environment, it can feed back into the design of the adaptation features and help to make them more adequate for local work practices. Also here, relations and interaction between development, local design, and use [25] make things work out.

Both these examples of co-operative design show how the design of technical infrastructure and the development of work practices around municipal service provision influence each other.
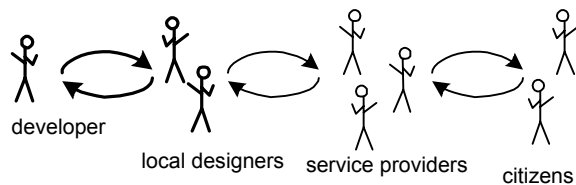

Figure 4

4. Towards sustainable structures for continual co-operation in design

The development of e-government in all reported cases does include the joint development of technical infrastructure, service provision, services and even what it means to be a citizen. There is no single or main developer or designer. Agency shifts over time, and depending on what aspect is in focus. Different actors in these interdependent design practices have different perspectives and different foci in their activity. No wonder, then, that the co-development of services, their provision and the technical infrastructure is not a smooth and simple process.

In the participatory design discourse, methods and tools have been developed to mediate co-operation between professionals that use software and developers. [15, 5, 23]. Can these methods be adapted and complemented to mediate complex co-operative processes as

they became visible in all four cases that we reported above? What does it require to expand participatory design beyond software or other development projects?

4.1 Including the public

Looking back to Annelie's case, the question arises: Could the 'cleaning lady', using the PIM terminal, bring up valuable aspects on further development of the artifact – if she only had the possibility?

If a continual activity of joint co-development of services is included as a central part of co-development of services, citizenship and technology, this also blurs the boundaries between governmental and municipal authorities, private sector employees and other actors within, for example, the voluntary sector but most of all – the boundary between citizens and the local authorities. The citizens become key figures in the 'web of connections' [25], that make up design, content as well as use of new technologies. This on-going intertwining and co-development of content, services and citizenship could be described as an essential part of creating an active citizenship, acknowledging the citizens and their experiences as a vital part in a continuous reconfiguration of relations and dialogue-models as well as articulation of citizenship.

In the discourse on participation in e-government, few reflections are made concerning the basic issue of the democratic values that could be gained by early involvement of local employees and citizens in developmental work or technology-based activities in the shape of local tailoring of technologies in settings of direct, and concrete importance for citizens, such as for instance the use of local public services in work places. Making more deliberate use of participatory design methods for incorporating multi-perspectives in service design as well as technology production and use could be an inclusive way to stimulate a broader, sustainable participation in local development of e-government.

4.2. Mapping out networks

Actor-Network Theory [3, 16, 8] might provide a theoretical and functional framework for drawing a process map where as many actors as possible, even those not explicitly recognized in official plans and documents, could initially be identified. Parallel with this identification work, it would be necessary to follow how the process and the decisions during the process are made, and how the direction of the web site development is under ongoing reformulations. By drawing this map of the process network, insights could be gained as to where the critical points are, where the actual decisions are

made, who is making these decisions, and where more resources and efforts should be put in. The surprising finding of the cartographical work might be that, besides the web site, other things (such as society and the municipal organization) are also being designed. [13; pp. 187-214]

Certainly, in vignettes 3 and 4, we can see how the design of technology is an integrated part of the design and development of service provision, and of work practices around these.

4.3. Tailorable software

To support the continuous participatory development of public services and their provision by citizens and municipalities, the technical infrastructure has to be flexible enough to accommodate the developing requirements. It does not matter how well the system fits when introduced. The usage, the organization and the users undergo continual changes. The complexity of the contexts makes it difficult to predict all needs that might be important in the future. Computer systems have to be adapted to be able to meet the changed circumstances.

The tailorable design of computer applications is therefore of special importance. Tailoring can be seen as a continual development of a tool, a process that successively leads to a better tool for the users. [20] This continual process of adjusting, tuning and improving should take place in the users' work environment and context.

Mørch and Mehandjiev [20] talk about tailoring as co-operation between developers and users; co-operation that takes place over a long period of time. Users tailor the tool when work practices change. Tailoring starts during or directly after installation of the tool, or later, during use of the tool. The long-term aspects are important, because organizations undergo continual changes. The adaptations to the system mirror the developing needs of the organization. The way the system is adapted over time helps to better understand the needs when developing a new version. Also for this 'slow motion' co-operation in design, the understanding of the situation where the software is used deepens with the ongoing design of the application.

Such practices, on the other hand, require a long term and stable relationship between developers, local tailors and users. Continuity in co-operation has to be maintained; new developments of applications intertwine with use, maintenance, tailoring, adaptation and further development. Understanding software design as networks of decisions in relation to use, technical and development contexts [11] can provide a starting point. Development tasks, design in use and use can be understood as parallel

activities with shifting intensity and shifting main actors. Ways to coordinate and manage such patchworks of design activities, as we were able to observe in our case studies, are still to be developed.

4.4. Shop floor IT management

Continual and sustainable relations of co-operation are not just an issue of the co-operation between software developers and local designers. Including the different actors in suitable forms into the ongoing development requires sustainable structures of participation. For achieving good quality public service provision, it seems important that good practices of continual design should be deliberately nurtured and cultivated. [6] An organizationally defined function and structure for 'shop floor IT management' [9] might be a way of making these design and development activities, and the multiple and shifting foci of design they represent, more visible and organizationally legitimate. Shop floor IT management we see as the everyday work of making IT work, that is, the mundane, on-going problem-solving, tuning, tailoring, further development and design in use of the existing computer support, and the integration of new applications into this existing environment.

5. Conclusions

Despite originating from four different cases, the four vignettes presented above reveal similar difficulties and problems concerning the everyday work of making e-government happen. Introducing e-government changes service provision, services and citizenship. To make it work requires the coordination of these developments along with the design and development of supporting technical and organizational infrastructures. Not only the co-operation between different actors within a municipality and with software providers has to be taken care for. Also the co-operation among different municipal actors and with the general public has to be supported. Different design processes with different foci have to be related to each other.

In the discussion part, we brought up issues raised by the examples presented in the vignettes, and discussed starting points for solutions:

Participatory design provides a frame to relate different practices of design and use, and facilitate their coordination. We brought up the extension of design, and therefore participation, beyond the project.

We brought up the continuous inclusion of citizens, using **actor network theory** to map out complex design constellations.

Already the **simple abstraction of on-going design interactions** (Figures 1-5) we found helped people to understand the complexity of the development they were involved in, and opened up for new, constructive design discussions between different groups of prospective users, service providers and software developers.

We discussed **tailorable software** and practices of tailoring, running parallel to and interrelated with the design, development and implementation of new applications.

We discussed, finally, the concept of **shop floor IT management**, which, somehow, brings all the other issues together in a culture of cultivating what you have, while moving ahead towards future technology developments. Shop floor IT management implies developing a space where methods and tools such as those we have discussed can become effective. Shop floor IT management means supporting and respecting the working relations of technology production and use, and building sustainable organizational infrastructures to support them.

Suchman's concept of design as 'artful integration' [25] of different contexts became for us researchers a 'boundary concept', allowing us to relate our different cases and our diverse disciplinary backgrounds. They match the scientific discourses in which e-government is discussed. To understand its complexity and handle the transition, these different discourses and the conceptual and methodological instruments they develop have to be related as well. We see our article as a step in this direction.

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